REMARKS

Favorable reconsideration of this application, in light of the following discussion and in view of the present amendment, is respectfully requested.

Claim 32 is amended in a non-substantive manner. Claims 1-32 are pending in the application.

I. Rejections under 35 U.S.C. § 102

In the Office Action, at page 2, claims 1-6, 8, and 18-20 were rejected under 35 U.S.C. 102(b) as being unpatentable over U.S. Patent No. 5,765,200 to McIlvain et al. This rejection is respectfully traversed because McIlvain does not discuss or suggest:

> sequentially assigning free blocks as discontinuous circular buffer blocks in a disk recording area, based on the control information when a time-delayed viewing mode is selected; and
>
> recording video streams for time-delayed viewing in the assigned circular buffer blocks,

as recited in independent claim 1. Further McIlvain does not discuss or suggest:

> a video stream storing area which records video streams, wherein the video stream storing area comprises video stream blocks which are arranged discontinuously; and
>
> a control information area which stores control information relating to the video stream storing area,

as recited in independent claim 18.

As a non-limiting example, the present invention as set forth in claims 1-32, for example, is directed to a method and system of video stream processing in which circular buffer blocks are arranged discontinuously such that time-delayed viewing of a channel can be implemented simultaneously with recording/reproduction of another channel. If a time-delayed viewing mode is selected, free blocks are sequentially assigned as discontinuous circular buffer blocks in a disk recording area. Video streams for the time-delayed viewing are then recorded in the assigned blocks, based on the control information. When a recording mode is selected with the time-delayed viewing mode, free blocks of the disk recording area are assigned and the video streams to be recorded are recorded in the assigned free blocks and video streams for time-delayed viewing are recorded in assigned circular buffer blocks. When a reproduction mode is selected with the time-delayed viewing mode, free blocks near the reproduced free blocks are assigned as buffer blocks and video streams for time-delayed viewing are recorded in these assigned circular buffer blocks.

McIlvain discusses a logical positioning mechanism provided within a storage controller to determine which logical position is to be accessed next. McIlvain is a computer system that uses the storage controller, a plurality of processors and a storage device, where the storage controller includes the logical position indicator to determine which of a plurality of logical positions within the storage device is to be accessed by one or more of the processors. As the storage controller determines the next location to write the data, the host processors are relieved of the task. The storage device includes data sets, which each include a plurality of logical positions, each of which is addressable and is capable of having data stored to or read from.

McIlvain does not discuss or suggest that free blocks are sequentially assigned as discontinuous circular buffer blocks. McIlvain merely discusses that a storage device includes data sets with logical positions that may represent a block on the storage device. McIlvain does not make any mention of assigning free blocks as discontinuous circular buffer blocks in a recording area. McIlvain further makes no mention of selecting a time-delayed viewing mode and assigning the free blocks in such a manner based on the control information required for recording a signal and reproducing recorded information when the time-delayed viewing mode is selected. McIlvain does not discuss time-delayed viewing. McIlvain also does not make any discussion of recording video streams for time-delayed viewing in the circular buffer blocks that have been sequentially assigned. In addition, McIlvain does not show, discuss or suggest, specifically at col. 5, lines 20-35, as cited by the Examiner, a recording medium including a video stream storing area and a control information area, in which the video stream storing area includes discontinuously arranged video stream blocks. McIlvain does not suggest that there is a control information area of the recording medium that stores control information that is related to the video stream storing area. In contrast, the present invention discusses that the recording medium includes a control information area that stores file attribute information, file assignment information, free block information for each track or cylinder, and circular buffer block information.

Therefore, as McIlvain does not discuss or suggest "sequentially assigning free blocks as discontinuous circular buffer blocks in a disk recording area, based on the control information when a time-delayed viewing mode is selected; and recording video streams for time-delayed viewing in the assigned circular buffer blocks," as recited in independent claim 1, and additionally does not discuss or suggest "a video stream storing area which records video streams, wherein the video stream storing area comprises video stream blocks which are arranged discontinuously; and a control information area which stores control information relating to the video stream storing area," as recited in independent claim 18, claims 1 and 18

patentably distinguish over the reference relied upon. Accordingly, withdrawal of the § 102(b) rejection is respectfully requested.

Claims 2-6, 8 and 19-20 depend either directly or indirectly from independent claims 1 and 18 and include all the features of their respective independent claims, plus additional features that are not discussed or suggested by the reference relied upon. For example, claim 2 recites "updating the control information and setting a pointer of a write point to a last one of the assigned circular buffer blocks after the recording of the video streams." Therefore, claims 2-6, 8 and 19-20 patentably distinguish over the reference relied upon for at least the reasons noted above. Accordingly, withdrawal of the § 102(b) rejection is respectfully requested.

In the Office Action, at page 4, claims 21, 23-26, and 28-32 were rejected under 35 U.S.C. 102(b) as being unpatentable over U.S. Patent No. 6,009,231 to Aoki et al. This rejection is respectfully traversed because Aoki does not discuss or suggest:

> a controller which sequentially assigns free blocks as discontinuous circular buffer blocks on the recording medium, based upon the control information in response to a time-delayed viewing mode being selected, and which records video streams for time-delayed viewing in the assigned circular buffer blocks,

as recited in independent claim 21. Further Aoki does not discuss or suggest:

> a controller which records a video stream in free blocks of the recording medium or reads a recorded video stream recorded on the recording medium and assigns free blocks nearest to the recorded or reproduced free blocks as circular buffer blocks,

as recited in independent claim 32.

Aoki discusses a data reproducing method and apparatus that allows for reverse reproduction. The apparatus includes a buffer for temporarily storing demodulated data and a control circuit that controls the buffer so that an unread data area and an already-read data area in the buffer take about half the total memory capacity. The control circuit 8 controls writing of the data sector units into the ring buffer 4. A read portion in the buffer is positioned so as to almost face each other across the ring buffer 4. When the read pointer advances to read data, which decreases the unread data area and increases the already-read data area, the control circuit 8 controls the pickup 2 to read new data and advances the write pointer to a new address position to be able to write one sector of read data to the ring buffer. Thereby, the sizes of the unread and already-read data areas are almost equal again.

Aoki does not discuss or suggest sequentially assigning free blocks as discontinuous circular buffer blocks. Aoki, specifically in the section cited by the Examiner at col. 7 line 59 –

col. 8, line 34, merely discusses that data is stored in a circular buffer and the stored data may be retrieved in a first and a second direction, allowing for reverse reproduction. Aoki does not discuss assigning free blocks based on control information in response to a time-delayed viewing mode being selected. No mention is made of a selection of a time-delayed viewing mode, merely the ability to reverse reproduce stored data. Aoki further does not discuss or suggest that video streams are recorded for time-delayed viewing in the discontinuous circular buffer blocks. Aoki additionally does not discuss recording a video stream in free blocks or reading a recorded video stream and assigning free blocks nearest to the recorded or reproduced free blocks as circular buffer blocks. No mention is made in Aoki of assigning free blocks near to the recorded or reproduced blocks as circular buffer blocks.

Therefore, as Aoki does not discuss or suggest "a controller which sequentially assigns free blocks as discontinuous circular buffer blocks on the recording medium, based upon the control information in response to a time-delayed viewing mode being selected, and which records video streams for time-delayed viewing in the assigned circular buffer blocks," as recited in independent claim 21, and does not discuss or suggest "a controller which records a video stream in free blocks of the recording medium or reads a recorded video stream recorded on the recording medium and assigns free blocks nearest to the recorded or reproduced free blocks as circular buffer blocks," as recited in independent claim 32, claims 21 and 32 patentably distinguish over the reference relied upon. Accordingly, withdrawal of the § 102(b) rejection is respectfully requested.

Claims 23-26 and 28-31 depend either directly or indirectly from independent claim 21 and include all the features of independent claim 21, plus additional features that are not discussed or suggested by the reference relied upon. For example, claim 25 recites that "the controller updates the control information and sets a pointer of a write point to a last one of the assigned circular buffer blocks after recording the video streams." Therefore, claims 23-26 and 28-31 patentably distinguish over the reference relied upon for at least the reasons noted above. Accordingly, withdrawal of the § 102(b) rejection is respectfully requested.

II. Rejections under 35 U.S.C. § 103

In the Office Action, at page 7, claims 7 and 9-17 under 35 U.S.C. 103(a) as being unpatentable over McIlvain in view of Aoki. This rejection is respectfully traversed.

As discussed above with respect to independent claim 1, McIlvain does not discuss or suggest:

> sequentially assigning free blocks as discontinuous circular buffer blocks in a disk recording area, based on the control information when a time-delayed viewing mode is selected; and
>
> recording video streams for time-delayed viewing in the assigned circular buffer blocks,

as recited in independent claim 1 and similarly in independent claims 9, 12 and 14. McIlvain further does not discuss or suggest:

> assigning free blocks of the disk recording area and recording video streams of a channel to be recorded in the assigned free blocks when a recording mode is selected during the time-delayed viewing mode, assigning free blocks nearest to the recorded free blocks as the circular buffer blocks, and recording the video streams for time-delayed viewing in the assigned circular buffer blocks,

as recited in independent claim 9, and similarly in claims 12 and 14. Further, as conceded by the Examiner, McIlvain does not discuss or suggest "a broadcast receiving system for time-delayed viewing, which includes a hard disk drive having control information required for recording an input signal and reproducing recorded information in a predetermined area," as recited in independent claims 9, 12 and 14.

As discussed above with respect to claims 1 and 18, McIlvain does not discuss or suggest assigning free blocks as discontinuous circular buffer blocks, based on control information required for recording an input signal and reproducing recorded information, and then recording video streams for time-delayed viewing in these assigned buffer blocks, as recited in claims 1, 9, 12 and 14. McIlvain further does not discuss or suggest assigning free blocks and recording video streams of a channel to be recorded in the assigned blocks when a recording mode is selected during the time-delayed viewing mode, then assigning free blocks nearest to the recorded blocks as the circular buffer blocks and recording the video streams in those assigned circular buffer blocks, as recited in claims 9, 12 and 14. Aoki fails to make up for the deficiency in McIlvain.

As discussed above with respect to claims 21, 23-26, and 28-32, Aoki merely discusses that data is stored in a circular buffer and the stored data may be retrieved in a first and a second direction, allowing for reverse reproduction. Aoki does not discuss or suggest sequentially assigning free blocks as discontinuous free blocks based on control information when a time-delayed viewing mode is selected, nor does Aoki discuss or suggest assigning free blocks of the disk recording area and recording video streams of a channel to be recorded in the assigned free blocks when a recording mode is selected during the time-delayed viewing mode, assigning free blocks nearest to the recorded free blocks as the circular buffer blocks, and

recording the video streams for time-delayed viewing in the assigned circular buffer blocks. Aoki merely discusses data storage in a circular buffer and the ability to write to a sector when a reverse reproduction mode is specific (col. 4, lines 15-16), but does not discuss or suggest sequentially assigning free blocks based on control information when a time-delayed viewing mode is selected, recording the video streams for time-delayed viewing in the assigned full blocks, assigning free blocks of the disk recording area and recording video streams of a channel to be recorded in the assigned free blocks when a recording mode is selected during the time-delayed viewing mode, assigning free blocks nearest to the recorded free blocks as the circular buffer blocks, and recording the video streams for time-delayed viewing in the assigned circular buffer blocks.

Further, there is no motivation cited whatsoever to combine McIlvain and Aoki to suggest all the claim limitations of independent claims 1, 9, 12 and 14, as is required in establishing a *prima facie* case of obviousness. The applicants respectfully submit that the rejection fails to establish a *prima facie* case of obviousness. To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or discuss all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). *See* M.P.E.P. § 2142.

The Examiner alleges that "it would have been obvious to one of ordinary skill in the art at the time of the invention to use a video stream processing method, as disclosed by McIlvain et al., and further incorporate a system wherein the video streams are different broadcast channels being entered into the system, as disclosed by Aoki et al." As is required in establishing a *prima facie* case of obviousness, the Examiner is required to provide a motivation to combine the references. No motivation is cited herein. Further, it is impermissible hindsight to combine the references because express motivation to combine the references is lacking.

Thus, a *prima facie* case of obviousness has not been established. First, the references when combined do not teach or discuss all the claim features of independent claims 1, 9, 12 and 14. Second, there is no adequate motivation or suggestion to combine the reference teachings to suggest all the features of independent claims 1, 9, 12 and 14. Therefore, as a *prima facie*

case of obviousness has not been established, independent claims 1, 9, 12 and 14 patentably distinguish over the references relied upon. Accordingly, withdrawal of the § 103(a) rejection is respectfully requested.

Claims 7, 10-11 and 13 depend either directly or indirectly from independent claims 1, 9 and 12 and include all the features of their respective independent claims, plus additional features that are not discussed or suggested by the references relied upon. For example, claim 7 recites that "the sequentially assigning free blocks comprises interleavedly assigning the free blocks for each video stream, if the video streams are of different channels to be recorded concurrently." Therefore, claims 7, 10-11 and 13 patentably distinguish over the references relied upon for at least the reasons noted above. Accordingly, withdrawal of the § 103(a) rejection is respectfully requested.

As to claims 15-17, McIlvain does not discuss or suggest a stream processing method in a broadcast receiving system for time-delayed viewing that includes a disk drive having control information required for recording an input signal and reproducing recorded information in a predetermined area, and does not discuss or suggest:

> assigning free blocks of a recording disk area; recording video streams of a channel to be recorded in the assigned free blocks; assigning free blocks nearest to the recorded free blocks as circular buffer blocks; and recording the video streams for time-delayed viewing in the assigned circular buffer blocks,

as recited in independent claim 15, does not discuss or suggest:

> reading blocks to be reproduced based on the control information; assigning free blocks nearest to the reproduced free blocks as circular buffer blocks; and recording video streams for time-delayed viewing in the assigned circular buffer blocks,

as recited in independent claim 16, and does not discuss or suggest:

> recording a video stream in free blocks of a disk recording area or reading a recorded video stream recorded in the disk recording area; and assigning free blocks nearest to the recorded or reproduced free blocks as circular buffer blocks,

as recited in independent claim 17.

As discussed above, McIlvain merely discusses a storage device that includes addressable logical positions. McIlvain makes no discussion relating to assigning free blocks, recording video streams of a channel to the free blocks, reading blocks to be reproduced based on control information, assigning free blocks nearest to the recorded free blocks or the reproduced free blocks as circular buffer blocks and recording the video streams for time-delayed viewing in the assigned circular buffer blocks. As discussed above, Aoki fails to make

up for the deficiency in McIlvain. Specifically, Aoki merely discusses that data is stored in a circular buffer and the stored data may be retrieved in a first and a second direction, allowing for reverse reproduction. Aoki does not make up for the deficiency in McIlvain of a broadcast receiving system for time-delayed viewing in which specific blocks are assigned, video streams are recorded in the assigned blocks, and free blocks near to recorded or reproduced free blocks are assigned as circular buffer blocks. Further, as discussed above, there is no adequate motivation cited to combine the references.

Therefore, as the combination of McIlvain and Aoki does not suggest all the features of independent claims 15-17 and there is no adequate motivation to combine the references to suggest the present invention, claims 15-17 patentably distinguish over the references relied upon. Accordingly, withdrawal of the §103(a) rejection is respectfully requested.

In the Office Action, at page 9, claims 22 and 27 were rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki in view of U.S. Patent No. 5,884,284 to Peters et al. This rejection is respectfully traversed.

As discussed above with respect to independent claim 21, Aoki does not discuss or suggest "a controller which sequentially assigns free blocks as discontinuous circular buffer blocks on the recording medium, based upon the control information in response to a time-delayed viewing mode being selected, and which records video streams for time-delayed viewing in the assigned circular buffer blocks." Peters fails to make up for the deficiency in Aoki. Specifically, Peters discusses a telecommunication user account system and method that creates, maintains, processes and analyzes data regarding individual users for telecommunications services, but does not discuss or suggest the deficiency in Aoki, namely sequentially assigning free blocks as discontinuous circular buffer blocks based on control information in response to a time-delayed viewing mode selected and recording video streams for time-delayed viewing in the assigned buffer blocks. In addition, there is no adequate motivation cited to combine Aoki and Peters to teach all the claimed features of independent claim 21, as it is unclear how the motivation of allowing "for more information to be transmitted and entered into the system" is an adequate motivation to suggest the combination of the references.

As the combination of Aoki and Peters does not suggest all the features of claim 21 and there is no adequate motivation cited to combine Aoki and Peters, independent claim 21 patentably distinguishes over the reference relied upon. Claims 22 and 27 depend either directly or indirectly from claim 21 and include all the features of claim 21, plus additional features that

are not discussed or suggested by the references relied upon. For example, claim 27 recites "a read-only memory which stores control program data to control the random access memory and the hard disk drive; and a second random access memory which temporarily stores data during a control operation of the controller." Therefore, claims 22 and 27 patentably distinguish over the references relied upon for at least the reasons noted above. Accordingly, withdrawal of the § 103(a) rejection is respectfully requested.

Conclusion

In accordance with the foregoing, claim 32 has been amended. Claims 1-32 are pending and under consideration.

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

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By: _____

Kari P. Footland
Registration No. 55,187

1201 New York Avenue, NW, 7th Floor
Washington, D.C. 20005
Telephone: (202) 434-1500
Facsimile: (202) 434-1501